

What is claimed is:

Sub 1 > 1. A process for producing an oxide single crystal, said process comprising the steps of melting a raw material of said oxide single crystal in a crucible, contacting a seed crystal to a melt of the raw material, drawing said melt from an opening of said crucible by pulling down the seed crystal, growing the oxide single crystal, and cooling said oxide single crystal, while it is being drawn from said opening of said crucible.

2. A process for producing an oxide single crystal according to claim 1, wherein said oxide single crystal is cooled by removing ambient heat thereof.

Sub A, 1 > 3. A process for producing an oxide single crystal according to claims 1 or 2, wherein said oxide single crystal is cooled by blowing a cooling medium thereto.

4. A process for producing an oxide single crystal according to any one of claims 1 or 2, wherein said oxide single crystal is drawn from an opening of a nozzle portion provided at a tip of said crucible.

5. A process for producing an oxide single crystal according to claim 3, wherein said oxide single crystal is drawn from an opening of a nozzle portion provided at a tip of said crucible.

Sub A₂ 6. A process for producing an oxide single crystal according to claims 1 or 2, wherein said oxide single crystal is of a planar form.

7. A process for producing an oxide single crystal according to claim 3, wherein said oxide single crystal is of a planar form.

8. A process for producing an oxide single crystal according to claim 4, wherein said oxide single crystal is of a planar form.

9. A process for producing an oxide single crystal according to claim 5, wherein said oxide single crystal is of a planar form.

10. An apparatus for producing an oxide single crystal comprising a crucible for melting a raw material of said oxide single crystal and a cooler,

wherein said crucible has an opening and said cooler is provided at least under said opening of the crucible to cool said oxide single crystal, while it is drawn from said opening of the crucible.

11. An apparatus for producing an oxide single crystal according to claim 10, wherein said coolers are provided with a path for flowing a cooling medium to remove ambient heat of the cooler.

SUB A₃ > 12. ~~An apparatus for producing an oxide single crystal according to claims 10 or 11, wherein the cooler has a blowing hole for blowing out the cooling medium toward said oxide single crystal.~~

13. An apparatus for producing an oxide single crystal according to claims 10 or 11, wherein said crucible has a nozzle portion and said opening is provided at a tip of said nozzle portion.

14. An apparatus for producing an oxide single crystal according to claim 12, wherein said crucible has a nozzle portion and said opening is provided at a tip of said nozzle portion.

SUB A₄ > 15. ~~An apparatus for producing an oxide single crystal according to claims 10 or 11, which further comprises an after-heater, the after-heater being adapted under said cooler for controlling an ambient temperature of said oxide single crystal.~~

16. An apparatus for producing an oxide single crystal according to claim 12, which further comprises an after-heater, the after-heater being adapted under said cooler for controlling an ambient temperature of said oxide single crystal.

17. An apparatus for producing an oxide single crystal according to claim 13, which further comprises an after-heater, the after-heater being adapted under said cooler for controlling an ambient temperature of said oxide single crystal.

18. An apparatus for producing an oxide single crystal according to

claim 14, which further comprises an after-heater, the after-heater being adapted under said cooler for controlling an ambient temperature of said oxide single crystal.

Sub A₅ >

19. An apparatus for producing an oxide single crystal according to claims 10 or 11, wherein said oxide single crystal is a planar form.

20. An apparatus for producing an oxide single crystal according to claim 12, wherein said oxide single crystal is a planar form.

21. An apparatus for producing an oxide single crystal according to claim 13, wherein said oxide single crystal is a planar form.

22. An apparatus for producing an oxide single crystal according to claim 14, wherein said oxide single crystal is a planar form.

23. An apparatus for producing an oxide single crystal according to claim 15, wherein said oxide single crystal is a planar form.

24. An apparatus for producing an oxide single crystal according to claim 16, wherein said oxide single crystal is a planar form.

25. An apparatus for producing an oxide single crystal according to claim 17, wherein said oxide single crystal is a planar form.

26. An apparatus for producing an oxide single crystal according to claim 18, wherein said oxide single crystal is a planar form.

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